

(43) Date of A publication 15.11.1989

1/3

2218449

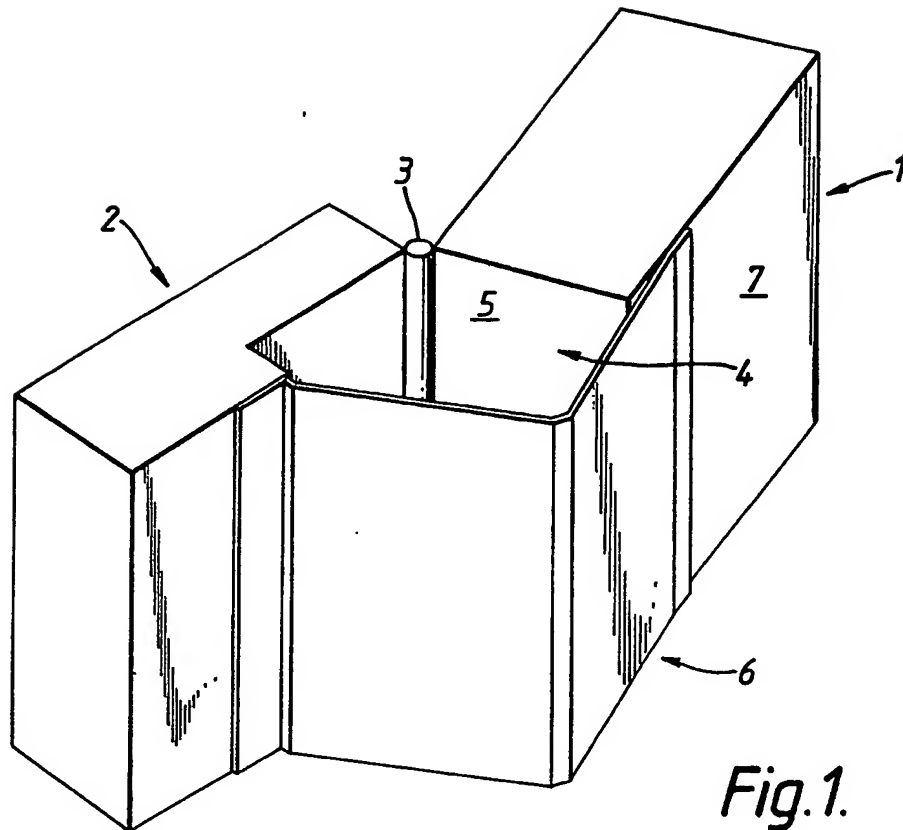


Fig. 1.

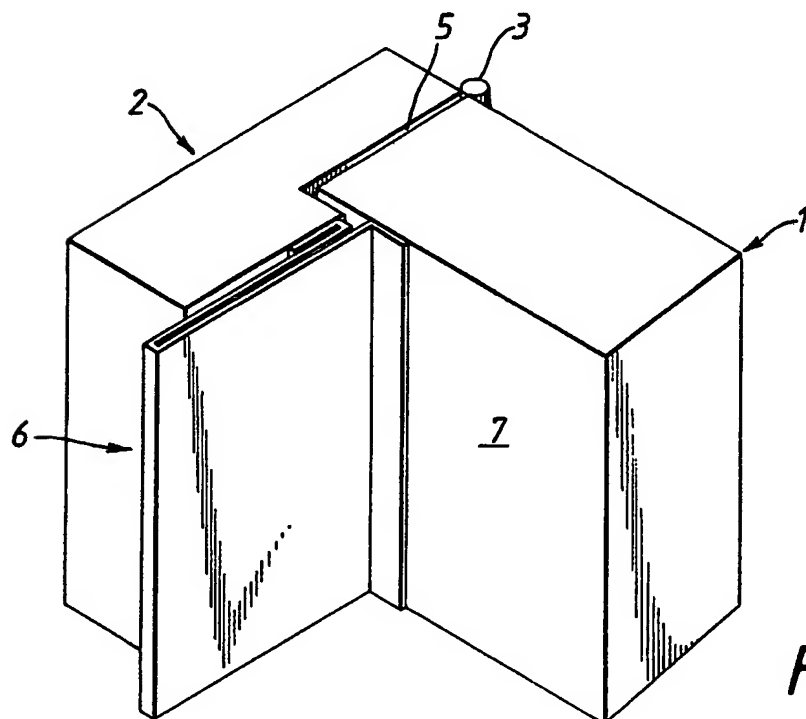


Fig. 2.

2/3

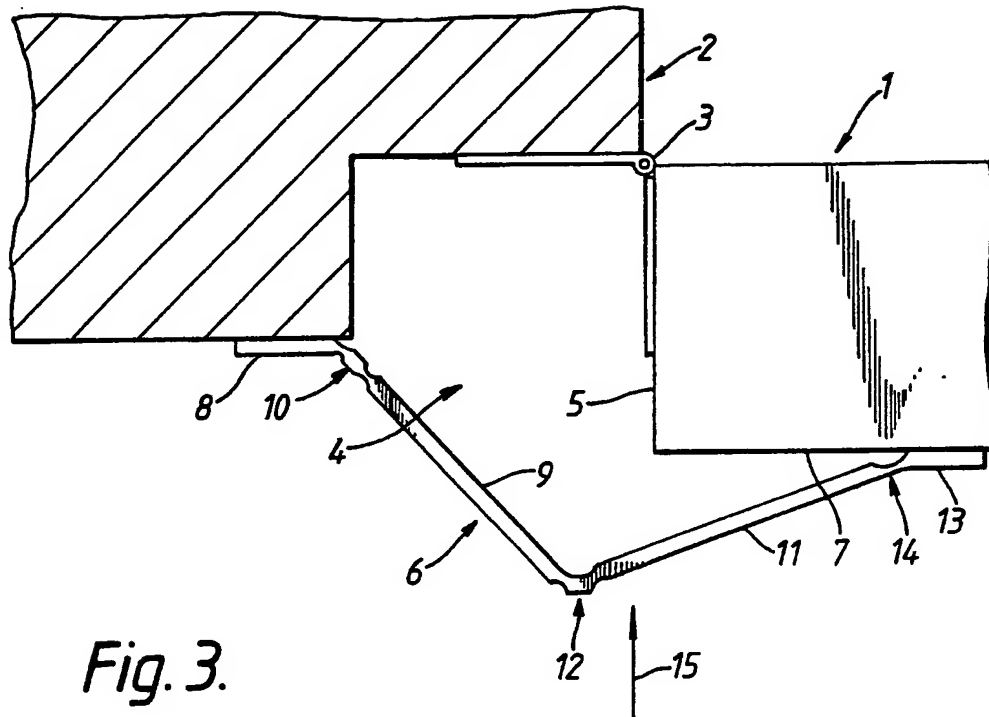


Fig. 3.

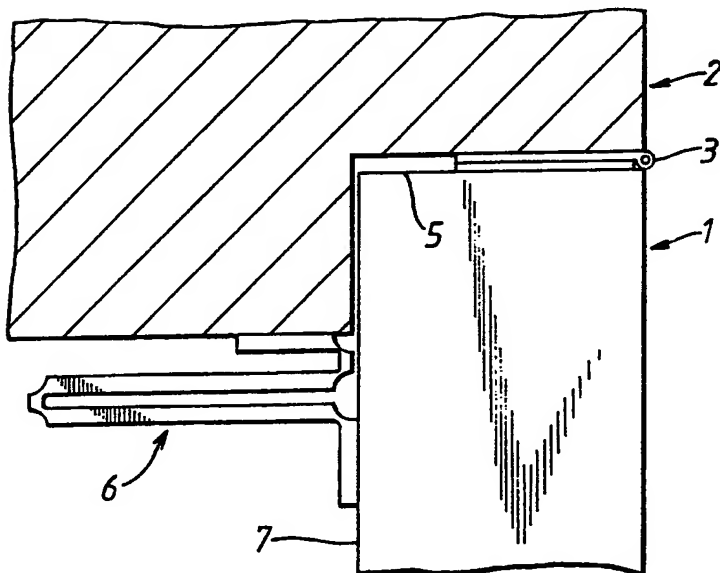
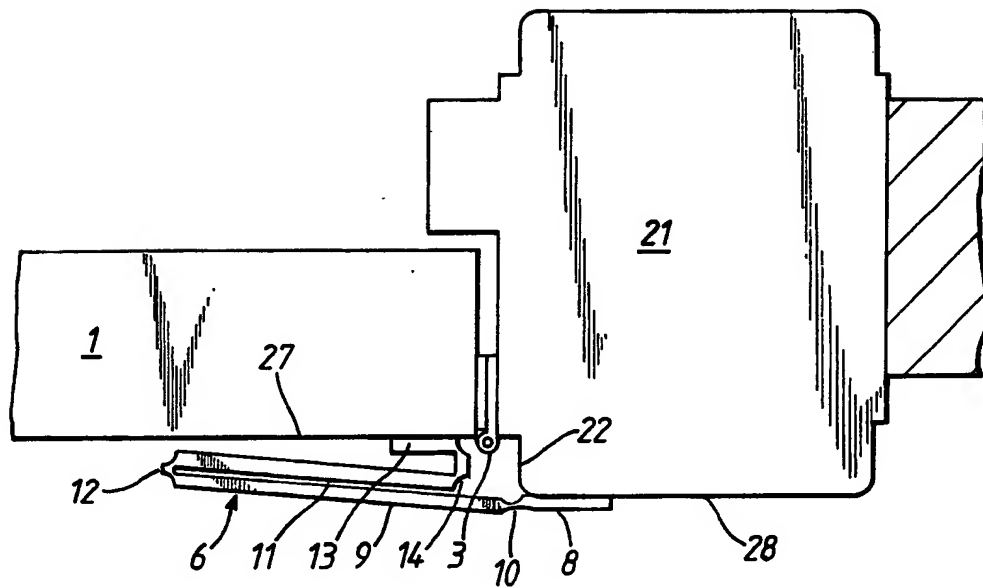


Fig. 4.

*Fig. 5.*

Improvements in and relating to Safety Devices and
Methods of Using Safety Devices

This invention relates to safety devices and to methods of using safety devices. The invention has
5 particular reference to safety devices for use on closure members, for example doors, and to methods of using such devices.

Many closure members, for example doors, are mounted by hinges which allow the member to pivot about
10 a vertical axis when moving from an open to a closed position. Pivotal movement of the member into one position - usually the open position - opens a gap on the hinged side of the door between the side of the door frame to which the member is hinged and the adjacent end
15 face of the door. The gap closes as the member moves towards its other position.

The gap represents a hazard particularly to young children who may inadvertently place their fingers in the gap thereby risking injury by the closure member as it
20 moves to close the gap.

It is an object of the present invention to provide a safety device and a method of using such device to prevent the possibility of such injuries.

The present invention provides a safety device
25 for a door, the device comprising a strip, capable of being laid substantially flat, the first and second longitudinal edge portions of which strip provide means

whereby the device may be secured to the door and to a frame on which the door is hingedly mounted, the part of the strip between the edge regions comprising a first intermediate longitudinal portion hinged to the first edge portion and to a second intermediate longitudinal portion, the second intermediate portion being also hinged to the second edge portion, the hinges in said strip being formed by longitudinal portions of the strip that are narrow compared with the width of and flexible relative to the first and second intermediate portions.

The present invention also provides a safety device for a door, the device comprising a strip capable of being laid substantially flat, first and second longitudinal edge portions of which strip provide means whereby the device may be secured to the door and to a frame upon which the door is hingedly mounted, the part of the strip between the edge portions comprising alternating relatively flexible and relatively rigid intermediate longitudinal portions.

Further, the invention provides a door assembly including a door having an edge hingedly mounted on a frame and a safety device as defined in either of the two preceding paragraphs, the first edge region of the device being mounted close to the edge of the door on the face of the door that is closer to or within the frame when the door is shut, the second end region of the device being

mounted on or near the frame, so the device bridges the gap between the edge of the door and the frame when the door is open.

5 There may, in certain door constructions, also be a corresponding problem when the door opens; the invention accordingly also provides a device for positioning on the face of the door more remote from the frame, so that it bridges a gap between the door and the frame when the door is closed.

10 Whilst it is preferred that the strip extends from the upper end of the gap to the lower end thereof or substantially so for complete safety, it is usually sufficient to employ a strip of sufficient length to extend over that length of the gap where the risk is
15 greatest that fingers might get trapped. For example, the strip may commence at a height of say 20 cm above floor level and terminate at a height of say 150 cm above floor level.

20 The strip may be of a plastics material of sufficient strength to resist easy penetration and be either flexible in a direction across its width or comprise substantially rigid lengths interconnected by hinge sections. The hinge sections may be integral with the rigid lengths and comprise lines of weakness or they
25 may consist of portions of a flexible plastics material which may be integral with the rigid lengths.

 The strip may be formed from other materials than

plastic materials and such strips may be of one or other of the forms just referred to.

Preferably, the strip consists essentially of a first edge portion by which it is secured to the side of the door frame, a first intermediate portion hinged to the first edge portion, a second intermediate portion hinged to the first intermediate portion and a second edge portion hinged to the second intermediate portion and by means of which the strip is secured to a door surface.

The hinge connections may be an integral part of the strip.

Further according to the invention, a method of bridging at least part of the length of the gap between the end face of a closure member and the side of the frame to which the closure member is hinged comprises the steps of securing a device according to the invention to the side and to a surface of the closure member adjacent the gap.

Preferably, the strip extends substantially the length of the gap.

In one method according to the invention, the strip is secured to the door surface a short distance from the adjacent end face, the distance being sufficient to minimize the extent to which the strip can be pressed into the gap.

By way of example only, two embodiments of the

invention suitable for use on doors and a method of fitting the embodiments will now be described in greater detail with reference to the accompanying drawings of which:-

- 5 Fig. 1 is a perspective view of a part of a door and door frame with a safety device embodying the invention fitted, the door being shown in an open position,
- Fig. 2 corresponds with Fig. 1 except that the door is shown in a closed position,
- 10 Fig. 3 is a horizontal section through the door and frame, the door being in an open position,
- Fig. 4 corresponds with Fig. 3 except that the door is shown in a closed position, and
- 15 Fig. 5 is a horizontal section through a door and frame with a second safety device fitted to the opposite face of the door.

 The drawing shows part of a door 1 mounted in a conventional manner in a door frame. The door is hinged to a side 2 of the frame by two or more hinges one of which is shown diagrammatically at 3.

20

 It will be observed that when the door is open or partially so, a gap 4 exists between the side 2 and the adjacent end face 5 of the door 1. The gap 4 is accessible to a person standing close to the door and represents a hazard should the person inadvertently place

25

his hand or fingers in the gap 4 and leave them there as the door is closed.

To eliminate the hazard, the gap is bridged over at least part of its length by a bridging strip 6 secured
5 between the side 2 and the surface 7 of the door 1 adjacent to the end face 5.

The strip 6 is of a plastics material, for example polypropylene and comprises a first edge portion 8 secured to the side 2 of the door frame as shown, a
10 first intermediate portion 9 hinged to the edge portion 8 by a hinge portion 10, a second intermediate portion 11 hinged to the intermediate portion 9 by a hinge portion 12 and a second edge portion 13 hinged to intermediate portion 11 by a hinge portion 14. The second edge portion
15 13 is secured to the surface 7 of the door 1 at a location spaced slightly from the end face 5.

The edge portions 8 and 13 and the intermediate portions 9 and 11 are relatively rigid whilst the hinge portions 10, 12 and 14 are flexible and comprise either
20 reduced thickness parts (as shown) which have the necessary flexibility or are portions of a flexible material.

The edge portions 8 and 13 may be glued, respectively, to the side 2 and door surface 7, or they
25 may be secured by double-sided adhesive tape, or they may be nailed or screwed, or some other suitable securing means may be employed.

In use, with the door 1 in its closed position, the bridging strip 6 can fold back neatly against the side 2 of the door frame as shown in Figs. 2 and 4. As the door 1 opens, the bridging strip 6 opens out to the position shown in Figs. 1 and 3 in which the gap 4 is bridged and access thereto is prevented.

Because the edge portion 13 is secured to the surface 7 at a location spaced from the end face 5, the bridging strip 6 cannot be pressed into the gap 4. This additional safety factor arises because inward pressure on strip 6 in the direction of arrow 15 brings the second intermediate portion into contact with the surface 7 and then inward movement of the strip 6 ceases.

Ideally, the strip 6 extends from the top end of the gap 6 to the bottom end thereof. However, in many circumstances adequate protection is obtained if the strip 6 extends over the central part of the length of the gap say from about 20 cm above the lower end of the gap to about 90 cm above the bottom end.

Referring now to Fig. 5, in which parts like those of Figs. 1 to 4 are allotted like reference numerals, it will be seen that a door 1 is mounted by a hinge 3 to a frame 21, the frame 21 being so shaped that when the door 1 is opened, fingers might be trapped between an edge 22 of the frame 21 and a surface 27 of the door 1.

To eliminate the hazard, the gap is bridged over at least part of its length by a bridging strip 6, a first

edge portion 8 of the strip 6 being secured to a surface
28 of the frame, a second edge portion 13 being secured
to the surface 27 of the door 1, the remaining portions
of the strip, 9, 10, 11, and 12, being as described above
5 with reference to Figs. 1 to 4.

It will of course be appreciated that a door may
have a device according to the invention on each side
thereof.

It will be understood that the bridging strip 6
10 does not have to be of the form described above with
reference to the drawings. A relatively rigid material
is preferred because it is not then easy, inadvertently,
to press the strip back into the gap but there must be
sufficient flexibility across the width of the strip to
15 allow it to flex as the door closes.

Claims:

1. A safety device for a door, the device comprising a strip, capable of being laid substantially flat, the first and second longitudinal edge portions of which strip provide means whereby the device may be secured to the door and to a frame on which the door is hingedly mounted, the part of the strip between the edge regions comprising a first intermediate longitudinal portion hinged to the first edge portion and to a second intermediate longitudinal portion, the second intermediate portion being also hinged to the second edge portion, the hinges in said strip being formed by longitudinal portions of the strip that are narrow compared with the width of and flexible relative to the first and second intermediate portions.

2. A safety device for a door, the device comprising a strip capable of being laid substantially flat, first and second longitudinal edge portions of which strip provide means whereby the device may be secured to the door and to a frame upon which the door is hingedly mounted, the part of the strip between the edge portions comprising alternating relatively flexible and relatively rigid intermediate longitudinal portions.

3. A device as claimed in claim 1 or claim 2, wherein the relatively flexible portions are of thickness less than that of the other portions between the edge portions.

4. A device as claimed in claim 1 or claim 2, wherein the flexible portions are of a more flexible material than that of the other portions between the edge regions.

5 5. A device as claimed in any one of claims 1 to 4, wherein the strip is of plastics material.

6. A device as claimed in any one of claims 1 to 5, wherein the strip is capable of being attached by its longitudinal edge regions to a door and a frame from which
10 the door is hingedly hung with the free edges of the strip facing away from the hinge.

7. A device as claimed in any one of claims 1 to 6, wherein the part of the strip between the edge portions consists of alternating broad, relatively rigid, longitudinal portions and narrow, relatively flexible
15 longitudinal portions.

8. A device as claimed in any one of claims 1 to 7, wherein a flexible portion which, in use, may form a 180° bend comprises two flexible sub-portions, positioned one
20 each side of a less flexible sub-portion.

9. A safety device for a door, substantially as herein described with reference to, and as illustrated by, Figs. 1 to 4 or Fig. 5 of the accompanying drawings.

10. A door assembly including a door having an edge
25 hingedly mounted on a frame and a safety device as defined in any preceding claim, the first edge region of the device being mounted close to the edge of the door on the face of

th door that is closer to or within the frame when the door is shut, the second end region of the device being mounted on or near the frame, so the device bridges the gap between the edge of the door and the frame when the door is
5 open.

11. A door assembly as claimed in claim 10 which is so shaped and so mounted that, when the door is shut, the strip is so folded that its relatively rigid intermediate portions lie parallel to each other and at right
10 angles to the plane of the door.

12. A door assembly including a door having an edge hingedly mounted on a frame and a safety device as defined in any one of claims 1 to 9, the first edge region of the device being mounted close to the edge of the door on the
15 face of the door more remote from the frame when the door is shut, the second end region of the device being mounted on or near the frame, so the device bridges a gap between the edge of the door and the frame when the door is shut.

13. A door assembly as claimed in claim 10, which
20 is so shaped and so mounted that, when the door is shut, the strip is so folded that its relatively rigid intermediate portions lie parallel to each other and parallel to the plane of the door.

14. A door assembly, substantially as herein
25 described with reference to, and as illustrated by, Figs. 1 to 4 or Fig. 5 of the accompanying drawings.